4/1/19 Agenda #12

TOWN OF WEST HARTFORD

DEPARTMENT OF COMMUNITY DEVELOPMENT
PLANNING DIVISION
TOWN OF WEST HARTFORD
50 SOUTH MAIN STREET
WEST HARTFORD, CT 06107-2431
TEL: 860.561.7555 FAX: 860.561.7504
www.westhartfordct.gov

RECEIVED
FEB 22 2019
PLANNING & ZONING DIVISION
Town of West Hartford, CT

PERMIT APPLICATION FOR: (check one of the following)

__ Lot Split | X Special Use Permit | __ Site Plan

__ Lot Line Revisions | __ Subdivision | __ Building Line

File #: SUP #1336 Date Received: 2/22/19

Street Address of Proposed Application: 1678 Asylum Ave

Zone: R-10 Acreage/Lot Area: _____ Parcel/Lot#: _____

Application Fee: $350.00 Surcharge Fee: $60.00 Affidavit Fee: $ 20.00

Applicant's Interest in Property: Owner

Brief Description of Proposed Activity: Removal of existing running track and natural grass field and construction of a new synthetic turf in its place. Construction of new athletic light poles.

The undersigned warrants the truth of all statements contained herein and in all supporting documents to the best of his/her knowledge and belief. Furthermore, the applicant agrees that submission of this document constitutes permission and consent to Commission and Staff inspections of the site. ***Note: Notice is hereby given the Connecticut Department of Public Health must be notified by applicants for any project located within a public water supply aquifer protection area or watershed area. (CTDPH website at http://www.dph.state.ct.us)***

University of Saint Joseph
Record Owner's Name

1678 Asylum Avenue
Street

West Hartford CT 06117
City **State** **Zip**

860-231-5220
Telephone #

Same as owner
Applicant's Name

Street

City **State** **Zip**

Telephone #

Contact Person:

Shawn Harrington
Name

1678 Asylum Avenue
Street

West Hartford CT 06117
City **State** **Zip**

860-231-5220
Telephone #

Applicant's Signature

Signature of Owner/Authorized Agent

sharrington@usj.edu
Email Address

03.28.19

Catherine Dorau
Associate Planner
Town of West Hartford
50 South Main Street
West Hartford, CT 06107-2485

Subject: 1678 Asylum Avenue – University of Saint Joseph
Wetland Map Amendment – IWW # 1099
Wetland Regulated Activity – IWWA # 1100
Special Use Permit – SUP # 1336

Dear Catherine,
In response to your email dated 3.26.19 regarding the University of Saint Joseph Athletic Field Renovation Project, we offer the following responses and comments.

Wetland Map Amendment IWW #1099:

1. A wetland map amendment signed by the professionals responsible for the information should be submitted no later than Friday, March 29th.

Response: Soil Science Environmental Services will provide the signed wetland map agreement by Friday, March 29th as requested.

Wetland Regulated Activity IWW #1100 & Special Use Permit #1336:

2. Page #4 of the Resubmission Documents for Wetland Map Amendment (IWW #1099) and IWWA Regulated Activity Permit (#1100) states that the existing athletic field light poles are 35 feet high. This conflicts with information in the Resubmission Documents for Special Use Permit (#1336) – the last page from Mr. Harrington to Mr. Rost dated March 15, 2019 stating the current lights are 60 feet high. This should be clarified.

Response: The six (6) existing athletic field light poles are 60'-0" in height. Documents have been updated accordingly.

3. The proposed light poles should be detailed on the plans. Please submit a detail sheet for the proposed lights (see attached sample of a similar type installation) and should also be included on any final plan set. The original description of the lights called for 80 feet – the March 22nd narrative materials is describing 70 feet. Please clarify – the detail sheet and narrative should be the same.

Response: The height of the proposed new athletic field light poles has been reduced from 80'-0" down to 70'-0". Documents have been updated accordingly.

4. Please note, the photometric plan submitted (ES101) still shows illumination onto the abutting properties. The lights should be adjusted or shielded to maintain '0' foot-candles.

Response: The University is working with the field lighting manufacturer on strategies to obtain a '0' foot-candle level along the western property line. The computer modeling of the photometric light levels is unable to factor in the dense stand of existing vegetation along this property line. As a result, the calculations shown on the plans do not depict the exact light level that will be distributed.

5. Exhibit B in the Resubmission Documents for Special Use Permit (#1336) states the following: Restrictions on Sound – "The public address system will not be used for practices." In the Response Letter to Catherine Dorau (dated 03.22.19), line item #8 states: "No sound system is proposed as part of this project." This should be clarified.

Response: The public address system will only be used during games. Please disregard 'Response No. 8' from the Response Letter dated 03.22.19.

6. The stormwater management storm-filter system plans and details should be submitted no later than noon Thursday, March 28th.

Response: Stormwater management revisions have been made to Drawing CU101 and CU501 to highlight the proposed storm filter system.

7. Details of the scoreboard should be submitted. (Refer to Response Letter dated 3/21/19, item #7)

Response: Scoreboard foundation detail has been added to Drawing CL501. Additional standard scoreboard details are included in Exhibit G. Details shown on Drawing CL501 are for reference only, and shall be coordinated with the Site Contractor and scoreboard manufacturer during the construction process.

8. The last sheet on the Resubmission Documents for Wetland Map Amendment (IWW #1099) and IWWA Regulated Activity Permit (#1100) shows a picture of the scoreboard which should have the dimensions. This information should be included on the final plan set.

Response: Dimensions of the existing scoreboard to be relocated have been shown on Drawing CL101.

9. Final plans should add as a note on sheets CE101 and CE501 "Additional erosion control devices shall be installed around any dewatering activity areas."

Response: Note has been added to Drawing CE101 and CE501.

10. Please provide documentation on how the existing drainage basin will be maintained.

Response: Information on maintenance activities has been added to the project narrative and is included in this resubmission.

Please feel free to contact me with any questions or if you require any further information. We look forward to continuing to work with the Town of West Hartford on this important project for the University of Saint Joseph.

Sincerely,

John McMeeking, RLA
SMRT Architects and Engineers
200 Brickstone Square, Ste. 303
Andover, MA 01810
(p):207.321.3960
(f): 207.772.1070
(e): jmcmeeking@smrtinc.com

03.22.19

Catherine Dorau
Associate Planner
Town of West Hartford
50 South Main Street
West Hartford, CT 06107-2485

Subject: 1678 Asylum Avenue – University of Saint Joseph
Wetland Map Amendment – IWW # 1099
Wetland Regulated Activity – IWWA # 1100
Special Use Permit – SUP # 1336

Dear Catherine,
In response to your letter dated 3.15.19 regarding the University of Saint Joseph Athletic Field Renovation Project, we offer the following responses and comments.

Wetland Map Amendment IWW #1099:

1. A more detailed wetland evaluation report specific to this site should be submitted (photos may be helpful).

Response: ***Soil Science Environmental Services is in the process of updating the Wetland Evaluation Report. The report will be provided directly by the University as an Addendum to this package on 3.25.19.***

2. The CT DEEP Statewide Inland Wetlands & Watercourses Activity Reporting Form should be submitted for the map amendment.

Response: ***The CT DEEP Statewide Inland Wetlands & Watercourses Activity Reporting Form for the map amendment has been included. Please refer to Exhibit C in the IWWA Regulated Activity Permit package.***

Wetland Regulated Activity IWW #1100 & Special Use Permit #1336:

3. Please provide additional information about the synthetic turf field type and materials.

Response: ***The proposed synthetic turf field system includes Astroturf Rootzone Blend 52 over a Brock ASP15 pad, with SBR/Sand infill.***

Please refer to Exhibit F in the IWWA Regulated Activity Permit package for detailed product specifications on all system components.

The proposed field drainage is collected with a series of underdrain piping and conveyed to the

existing 36" diameter storm drain pipe that flows to the southwest away from the project site. The pipe discharges into a wetland area located on the University campus. Per the conclusions noted in the July, 2010 Connecticut Department of Environmental Protection final report "Artificial Turf Study – Leachate and Stormwater Characteristics", the DEP suggests that use of stormwater treatment measures, such as stormwater treatment wetlands, wet ponds, infiltration structures, compost filters, sand filters, and biofiltration structures may reduce the concentrations of zinc in the stormwater runoff from artificial fields to levels below the acute aquatic toxicity criteria. This report was re-affirmed in 2015.

In addition, a stormwater management storm-filter system will be installed to further address any issues related to zinc or other potential contaminants. The storm-filter is an underground treatment device that traps particulates and absorbs pollutants from stormwater runoff. Final engineered plans and details will be provided.

4. On all pertinent sheets, identify the area of wetland soils.

Response: Wetlands and related wetland soils have been identified on all drawings.

5. The narrative should provide information regarding when the lights will be in use – including days and times.

Response: Additional information on field lighting use has been added to the narrative. In addition, please refer to Exhibit B in the Special Use Permit package.

6. Will the lights have timers? If so, what are the times?

Response: Yes, the lights will have timers. Lights will automatically turn off by 9:30pm on Friday and Saturday, and by 8:30pm on Sunday through Thursday. Please refer to Exhibit B in the Special Use Permit package for additional information.

7. Details of the relocated scoreboard should be shown on the plans. Will the scoreboard be lighted or have sound? If so, provide details.

Response: The existing scoreboard is being relocated approximately fifty (50) feet to the north of its current location. The scoreboard foundation details will match the existing condition. The scoreboard will <u>not</u> be lighted or have sound.

8. Is a sound system proposed? If so, details should be provided.

Response: <u>No</u> sound system is proposed as part of this project.

9. The proposed light poles should be detailed on the plan and meet Section 177-25 of the Zoning Code. Please note, the field lighting photometric plan included with the narrative indicates light spillage along the western property line. The lighting should be adjusted to maintain '0' foot-candles illumination onto the abutting properties.

Response: The field lighting system has been designed to limit all light spillage on abutting properties. When the lighting calculations are modeled, the software is unable to depict vegetation or any kind of

vertical structure. As a result, the calculations that have been provided do not factor in the existing dense stand of vegetation along the western property line. This vegetation is approximately forty (40) feet in width and will offer a well-defined buffer between the field lighting and the property line.

10. The field lighting photometric plan should be included in the Special Use Permit plan set.

Response: The field lighting photometric plan is now included in the plan set. Please refer to Drawing ES101.

11. Sheet CE501 refers to a dewatering system – the location and E &S controls to be used should be shown on the plan.

Response: As specified on Drawing CE501, dewatering locations will be implemented in response to specific site conditions. Perimeter erosion control devices are noted on the drawings and will be installed around any dewatering activity areas.

12. A comprehensive wetland impact assessment study should be submitted per Section 7.5 (i) 1, 2, & 3 of the Town of West Hartford Inland Wetlands & Watercourses regulations.

Response: Soil Science Environmental Services is in the process of updating the Wetland Evaluation Report. The report will provided directly by the University as an Addendum to this package on 3.25.19.

13. The erosion and sedimentation controls should be shown on the demolition plan.

Response: Erosion and sedimentation controls have been shown on Drawing CD101.

14. E & S controls should be extended along the west and east sides of the track, as well as extending the silt fence and hay bales easterly towards the construction access road.

Response: The extents of the erosion and sedimentation control devices have been extended/enhanced as requested. Please refer to Drawing CE101.

15. The height of the ball safety netting should be identified on detail sheet CL501.

Response: The height of the ball safety netting has been added to Drawing CL101 and detail A8/CL501.

16. The 'flush' symbol should be identified on sheets CG101 and CU101.

Response: The flush symbol has been clearly identified on Drawing CG101 and CU101.

17. The power receptacles proposed for the perimeter of the new field should be identified on the plans.

Response: Power receptacles are proposed at the mid-point of each side of the field. Please refer to Drawing ES100 and CL101.

18. Please provide results from the neighborhood informational meeting held on Thursday, February 28, 2019.

Response: ***There were no attendees at the scheduled neighborhood informational meeting on 2.18.19. Please refer to Exhibit C in the Special Use Permit package.***

Engineering Review:

1. The site inspection revealed that the existing detention basin is in need of maintenance to ensure it can function as it was designed.

Response: ***The University will conduct maintenance operations on the existing detention areas prior to the start of construction. This will include the removal of sediment accumulations, invasive and undesirable vegetation growth, and any other debris or deleterious material.***

Please feel free to contact me with any questions or if you require any further information. We look forward to continuing to work with the Town of West Hartford on this important project for the University of Saint Joseph.

Sincerely,

John McMeeking, RLA
SMRT Architects and Engineers
200 Brickstone Square, Ste. 303
Andover, MA 01810
(p):207.321.3960
(f): 207.772.1070
(e): jmcmeeking@smrtinc.com

DEPARTMENT OF
COMMUNITY SERVICES

March 15, 2019

Mr. Shawn Harrington
University of Saint Joseph
1678 Asylum Avenue
West Hartford, CT 06117

Subject: **1678 Asylum Avenue – University of Saint Joseph**
Wetland Map Amendment - IWW # 1099
Wetland Regulated Activity - IWW # 1100
Special Use Permit – SUP # 1336

Dear Mr. Harrington:

The Planning Division has reviewed the plan set titled "University of Saint Joseph, Athletic Field Renovation Project, 1678 Asylum Avenue, West Hartford, Connecticut, 06117" dated 2/20/19 for conformance with the current West Hartford Zoning and Wetland Regulations and offer the following comments:

Wetland Map Amendment IWW # 1099:

1. A more detailed wetland evaluation report specific to this site should be submitted (photos may be helpful).
2. The CT DEEP Statewide Inland Wetlands & Watercourses Activity Reporting Form should be submitted for the map amendment.

Wetland Regulated Activity IWW # 1100 and Special Use Permit # 1336:

3. Please provide additional information about the synthetic turf field type / materials.
4. On all pertinent sheets, identify the area of wetland soils.
5. The narrative should provide information regarding when the lights will be in use - including days and times.
6. Will the lights have timers? If so, what are the times?
7. Details of the relocated scoreboard should be shown on the plans. Will the scoreboard be lighted or have sound? If so provide details.
8. Is a sound system proposed? If so, details should be provided.
9. The proposed light poles should be detailed on the plan and meet Section 177-25 of the Zoning Code. Please note, the field lighting photometric plan included with the narrative indicates light spillage along the western property line. The lighting should be adjusted to maintain '0' foot-candles illumination onto the abutting properties.
10. The field lighting photometric plan should be included in the Special Use Permit plan set.
11. Sheet CD501 refers to a dewatering system – the location and E&S controls to be used should be shown on the plan.
12. A comprehensive wetland impact assessment study should be submitted per Section 7.5 (i) 1, 2, & 3 of the Town of West Hartford Inland Wetlands and Watercourses regulations.

TOWN OF WEST HARTFORD

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13. The erosion and sedimentation controls should be shown on the demolition plan.
14. E&S controls should be extended along the west and east sides of the track as well as extending the silt fence and hay bales easterly towards the construction access road.
15. The height of the ball safety netting should be identified on detail sheet CL-501.
16. The 'flush symbol' should be identified on sheets CG101 and CU101.
17. The power receptacles proposed for the perimeter of the new field should be identified on the plans.
18. Please provide results from the neighborhood informational meeting held on Thursday, February 28, 2019.

General Comments:
The plan set is based on applications for a 'Wetland Regulated Activity' and 'Special Use Permit' – please add those titles to the cover sheet under the name of the project.

The application and supporting documents and plans have been referred to our Engineering Division their comments will be forthcoming. Please submit responses to staff comments and revised plans no later than March 22nd. An electronic copy, two copies of the plan set on 24x36 paper, and 13 copies of reduced plan sets should be submitted.

If you have any questions please don't hesitate to contact me.

Best Regards,

Catherine Dorau

Catherine Dorau
Associate Planner

Copy: T. Dumais, Town Planner
Subject files

File:sd/tpz/SpecialUsePermits/1678AsylumAve_SUP#1336,IWW#1099&1100.USJ/comments3.15.19doc

C: 3.15.19 J. Harrington
T. Dumais
3.18.19 R. Pearson

DEPARTMENT OF
COMMUNITY SERVICES

March 15, 2019

TO: Catherine Dorau, Associate Planner

FROM: Charles R. Guarino, Civil Engineer II CRG

SUBJECT: 1678 Asylum Avenue
University of St. Joseph
Athletic Field Renovations

I have reviewed the plans titled "University of Saint Joseph Athletic Field Renovation Project 1678 Asylum Avenue West Hartford, Connecticut 06117" and the Stormwater Management Report dated 2/20/2019. The stormwater report shows the project will remove 30,500 S.F. of impervious area and will reduce the peak rate of stormwater runoff for all design storms.

The proposed stormwater and erosion control aspects of the plan are acceptable. However, the site inspection revealed the existing detention basin is in need of maintenance to ensure it can function as it was designed.

CRG:sr

C: Duane J. Martin, P.E., Town Engineer

TOWN OF WEST HARTFORD
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WEST HARTFORD, CONNECTICUT 06107-2431
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1 PROJECT NARRATIVE

1.1 Introduction

The project consists of the construction of a new multi-sport synthetic turf field and upgraded field lighting. Athletics are an integral component of student life at Saint Joseph's, and the University is looking to enhance and upgrade its current amenities. The proposed project development area is located at the northwest end of campus, within the footprint of the existing track and field. The track and natural grass field are in poor condition, and the University intends to remove these amentities and replace them with one new, lighted, multi-purpose synthetic turf field to support the University's field hockey, soccer, and lacrosse programs.

The construction of the new synthetic turf field will occur entirely within previously disturbed areas. There will be no impact to surrounding trees, vegetation, or parking areas, and there will be no significant changes to actual land uses on the site. The project will result in alterations to existing cover conditions within the project area. This report describes the impact of the cover changes on surface runoff quantity and quality, and describes measures that have been incorporated into the design to ensure that there will be no detrimental impacts to downstream receiving waters.

In addition to permanent stormwater management measures, a comprehensive array of temporary soil erosion and sediment control measures (SESC) will be installed to serve the construction phase of the project. Disturbed areas of the site will be covered and stabilized as soon as practical to avoid exposure of bare soil. Sediment transport will be minimized through the use of barriers, diversions and other Best Management Practices. The SESC measures will be inspected and maintained throughout construction, and until final stabilization is achieved across the site.

As a result of these measures, the development is not expected to have any significant impacts on downstream water quality or quantity.

1.2 Site Location

The University of Saint Joseph is located at 1678 Asylum Avenue in West Harford, CT and is bounded by Albany Avenue to the north, Steele Road to the east, and Trout Brook Drive to the west. The project development area is located at the northwest end of the campus, due west of the O'Connell Athletic Center. Six (6) existing tennis courts are located to the north of the development area, an asphalt walkway lines the eastern edge, and parking areas are located to the south. The development area currently consists of a 400-meter synthetic surfaced running track, and a natural grass multi-sport athletic field.

See Figure 1 for project location on USGS Topographic Map.

1.3 Site Topography

The existing natural grass field is crowned with a one and a half to two (1.5-2.0) percent pitch, draining east and west towards the track (center of field elevation: 105.75). To the north of the

track and field, the topography slopes upwards approximately six (6) feet to the tennis courts (elevation: 112.00). To the east of the track and field the grade pitches down into a swale and then upwards three feet to an asphalt walkway/access drive (elevation: 106.00). To the south and west, the topography slopes down approximately three to four feet into the woodlands and wetland pockets (elevation 100.00).

1.4 Receiving Waters

The Saint Joseph's campus generally drains from the northeast to southwest. The developed area is surrounded by several wetlands that drain towards the southwest end of campus to more wetlands. The runoff eventually drains to Trout Brook which is part of the Subregional Basin 4403. The Town of West Hartford is included in the "Connecticut" major watershed area.

The analysis described in this report focuses on the area disturbed by the athletic improvements and will demonstrate that the peak runoff rates to the wetlands are reduced under all design storm conditions due to the installation of the stone base underneath the synthetic turf field and the removal of impervious area (track surfacing and sidewalk areas).

1.5 Soils Conditions

The Natural Resources Conservation Service (NRCS) Web Soil Survey identifies the following predominant soil type within the disturbed area:

- Udorthents Smoothed– This designation is reflective of disturbed conditions where few, if any remnants exist of the natural soil horizons. Erosion factors for use in the Universal Soil Loss Equation are K=0.28, and T=3. Udorthents soils are classified as Hydrologic Soil Group C.

Geotechnical investigations indicate that the site is at the interface of moraine deposits (medium compact sand, silt, and gravel) and glacial lake deposits (stiff silt and clay). The water table is within five (5) feet of finish grade, with all soils three (3) feet below grade being fully saturated from capillary water. The complete subsurface exploration program and geotechnical engineering evaluation report by Welti Geotechnical, P.C. is included as part of this application for reference.

1.6 Historic Flooding

The project area is not identified within a flood area on the FEMA Firm Map No. 09003C0361F effective 09/26/2008. A copy of the FEMA map is included within this report.

1.7 Alterations to Natural Drainageways

The new project area drains to an existing piped system. The proposed project replicates these drainageways.

1.8 Methodology and Modeling Assumptions

Runoff and routing calculations have been performed for the watershed areas impacted by the project in both the pre-development and post-development conditions using HydroCAD© software. Time of concentration and runoff curve number calculations have been determined using the method described in NRCS Technical Release 55 – Urban Hydrology for Small Watersheds (TR-55). Time of concentration calculations have been amended where the value given by the TR-55 method is less than five minutes. In these cases a standard minimum value of five minutes has been used to keep this parameter within the acceptable working range of the model.

Design rainfall events have been modeled using the SCS Type III hydrograph for 24-hour duration storms. The rainfall depth for each return period is taken from *Table 7-2 – 2004 Connecticut Stormwater Quality Manual and ConnDOT Drainage Manual (2004)*. The rainfall depth values for standard design storm frequencies are given in the table below.

24-Hour Rainfall Depths for Hartford County, Connecticut at Design Storm Frequencies					
Table 7-2 – 2004 Connecticut Stormwater Quality Manual					
Frequency	1-Year	2-Year	10-Year	25-Year	100-Year
Rainfall Depth(in)	2.6	3.2	4.7	5.5	6.9

2 STORMWATER ANALYSIS

2.1 Pre-Development Conditions

The pre-development condition has been analyzed at one design point. Design Point 1 (DP-1) is a catch basin at the wetland to the south of the project site. This catch basin has a 36" inlet and 36" outlet which is directed towards the southwestern end of the campus. The stormwater eventually enters Trout Brook to the southwest of campus.

The pre-development conditions analysis has been broken out into four (4) subcatchment areas:

- SC-A includes the natural grass field and a majority of the track running lanes and runways. Stormwater from this area drains to the collector pipes along the east and west edge of the field and connect into the large catch basin in the south D-zone. This large catch basin outlets via 36" RCP to the catch basin in the south wetland.
- SC-B includes the south D-zone area, the perimeter lawn area, and the wetlands to the south. Stormwater flows overland to the catch basin in the south wetland.
- SC-C includes the existing sidewalks and lawn area to the east of the running track. This area drains to several yard drains that connect to the large catch basin in the south D-zone and outlets via 36" RCP to the catch basin in the south wetland.
- SC-D includes the lawn area to the north of the track. Stormwater is collected by a series of yard drains, which connect to the field header pipe. The header pipe connects to the large catch basin in the south D-zone and outlets via 36" RCP to the catch basin in the south wetland.

Detailed descriptions of the subcatchment areas can be found in the HydroCAD runoff reports and on the pre-development watershed plan.

2.2 Post-Development Conditions

The same total drainage area and design point were analyzed in the post-development condition. The major changes in coverage are the construction of a new synthetic turf field and the removal of the existing running track and adjacent sidewalk. Approximately 30,500 sf of impervious area is being removed as a result of the proposed project.

The synthetic turf field is included in the model as Direct Entry (CN 98) since there is no depression storage, or evapotranspiration loss of rainfall that lands on the structure. Rainfall will drain directly through the surface of the field to the underlying base layer of highly porous crushed stone. The stone base will act as a large storage reservoir, detaining rainfall that enters the structure. It should be noted that the stone layer extends 6 inches beneath the field underdrain piping, providing significant storage volume prior to *any* stormwater discharging to the piped drainage system. The stone base layer is proposed to be the reclaimed/recycled track base stone material. If there is an inadequate volume of reclaimed materials for re-use, borrow crushed stone will be installed. This material is modeled as a pond with 30% voids.

Based on the geotechnical investigation, the soils are very saturated and will not infiltrate into the subsoils underneath the field. Therefore, no exfiltration has been used in the HydroCAD model.

The underdrains are modeled as multiple vertical orifices that discharge to the larger collector pipes that collect and convey stormwater around the perimeter of the proposed turf field. The header pipe system will convey the rainfall to the existing structure to the south of the field.

Similar to the pre-development analysis, the post-development conditions analysis has been broken out into four (4) subcatchment areas:

- SC-A includes the synthetic turf field. Stormwater from this area will drain vertically to the panel drains which connect into the collector pipes along the east and west edge of the field. The collector pipe connects into the large catch basin in the south D-zone. This large catch basin outlets via 36" RCP to the catch basin in the south wetland.
- SC-B includes the south D-zone area that is to remain and the perimeter lawn area and wetlands to the south. Stormwater flows overland to the catch basin in the south wetland.
- SC-C includes the existing sidewalks and lawn area to remain to the east of the synthetic turf field. This area drains to several yard drains that connect to the large catch basin in the south D-zone and outlets via 36" RCP to the catch basin in the south wetland.
- SC-D includes the lawn area to the north of the track. Stormwater is collected by a series of yard drains, which connect to the field header pipe. The header pipe connects to the large catch basin in the south D-zone and outlets via 36" RCP to the catch basin in the south wetland.

Detailed descriptions of the subcatchment areas can be found in the HydroCAD runoff reports and on the post-development watershed plan. The runoff and routing analysis shows that there will be no increase in peak runoff from the proposed development under any design storm conditions.

Refer to the tables below for the peak flow and runoff volume comparisons in the 1-year, 2-year, 10-year, 25-year and 100-year storms.

Table 1 - Development Runoff Summary- Peak Flow (cfs)					
Design Point-1	Design Storm Event Return Period				
	1-Year	2-Year	10-Year	25-Year	100-Year
Pre-Dev	7.39	10.52	18.76	23.26	31.17
Post-Dev	4.20	6.03	11.48	15.31	21.58
Change	-3.19	-4.49	-7.28	-7.95	-9.59

Table 2 - Development Runoff Summary- Volume (acre-ft)					
Design Point-1	Design Storm Event Return Period				
	1-Year	2-Year	10-Year	25-Year	100-Year
Pre-Dev	0.558	0.788	1.409	1.757	2.381
Post-Dev	0.422	0.672	1.326	1.686	2.325
Change	-0.136	-0.116	-0.08	-0.071	-0.056

2.3 Best Management Practices (BMPs) / State of Connecticut Requirements

No specific stormwater BMPs are proposed to be constructed as part of this project because there is no increase in impervious area. The majority of the running track and adjacent sidewalk are proposed to be removed, which results in a reduction of approximately 30,500 sf of impervious area from the pre- to post-development condition.

State Requirements:

- Section 7.4 Pollutant Reduction
  - There is no added impervious area to the proposed project; therefore, a specific BMP for the treatment of the water quality volume is not required.
  - Installation of the synthetic turf field eliminates the need for fertilizers and other legal lawn treatments; therefore, reducing the amount of these materials which can have a detrimental effect on the wetland habitat.
  - The field project proposes no vehicular use, so oil spills and other hazardous materials typical of parking lots/driveways will not be an issue.
- Section 7.5 Groundwater Recharge
  - Due to the highly saturated soils and high groundwater level, provisions to address the groundwater recharge volume are not feasible.
- Section 7.6 Peak Flow Control
  - Stream Channel Protection
    - The 2-year, 24-hour post-development peak flow rate will be reduced to less than the 1-year, 24-hour pre-development peak flow rate.
      - 1-year pre-development flow rate = 7.39 cfs
      - 2-year post-development flow rate = 6.03 cfs
  - Conveyance Protection
    - The project's system is designed to the 10-year, 24-hour storm.
  - Peak Runoff Attenuation
    - The post-development peak flows will not result in any significant increase in the peak runoff from the site during design storm events of 2-year, 10-year, 25-year, and 100-year return periods.
  - Emergency Outlet Sizing
    - There are no proposed changes to the downstream outlets and the 100-year peak flow rates are being reduced; therefore, there should be no erosion at the existing outlets.

3 CONCLUSIONS

The runoff and routing calculations demonstrate that the development will not result in any increase in the peak runoff from the site during design storm events of the 1-year, 2-year, 10-year, 25-year and 100-year return periods. Due to the installation of the large porous stone reservoir underneath the field, the project will be able to store runoff beneath the field before outletting from the system. Also, with the installation of synthetic turf in lieu of natural grass, the project will eliminate the need for fertilizers and other legal lawn treatments. Therefore, the project will not result in any adverse impact on the downstream wetlands or watershed.

4 REFERENCES

- CT Stormwater Manual (2004 and as amended)
- Connecticut Guidelines for Soil Erosion and Sediment Control (2002)
- NRCS Technical Release 378
- NRCS Web Soil Survey
- Geotechnical Study for Synthetic Turf Field at University of Saint Joseph, 1678 Asylum Avenue, West Hartford, CT by Welti Geotechnical, P.C. dated January 25, 2019